Amendments to the Claims:

1. (currently amended) An apparatus for transporting a plurality of Time Division Multiplexing (TDM) streams over an asynchronous Ethernet network, comprising:

an ingress buffer for storing TDM data before encapsulation into Ethernet frames;

an egress buffer for storing TDM data after received Ethernet frames are segmented;

encapsulation means for retrieving TDM data from said ingress buffer, assembling Ethernet frames therefrom, inserting therein a first timestamp related to said TDM data and forwarding said assembled Ethernet frames to an Ethernet interface;

segmentation means for receiving Ethernet frames from said Ethernet interface, extracting TDM data and a second timestamp therefrom and storing said TDM data in said egress buffer; and

a processor comprising means for:

receiving TDM data from a plurality of TDM ports;

storing ~~said~~ received TDM data in a queue within said ingress buffer wherein all TDM data to be encapsulated within an Ethernet frame is stored together ~~in accordance with output Ethernet frames~~; and

retrieving TDM data from said egress buffer and generating a plurality of synchronous TDM data streams therefrom.

2. (previously amended) The apparatus according to claim 1, wherein said plurality of TDM streams comprises streams selected from a group comprising E1, T1, E3, T3, OC-3, STM-1, OC-12, and STM-4 streams.

3. (currently amended) The apparatus according to claim 1, wherein said encapsulation means encapsulates data from [[a]] said plurality of TDM ports into a single Ethernet frame.

4. (previously amended) The apparatus according to claim 1, wherein said encapsulation means encapsulates data from a plurality of TDM frames corresponding to a single TDM port into a single Ethernet frame.

5. (previously amended) The apparatus according to claim 1, wherein said segmentation means segments an Ethernet frame into a plurality of TDM streams, each TDM stream corresponding to a different TDM port.

6. (previously amended) The apparatus according to claim 1, wherein said segmentation means segments an Ethernet frame into a plurality of TDM frames corresponding to a single TDM port.

7. (previously amended) The apparatus according to claim 1, wherein said processor for storing TDM data received from a plurality of TDM ports in accordance with specific port based parameters.

8. (previously amended) The apparatus according to claim 1, wherein said processor for storing TDM data received from a plurality of TDM ports in accordance with specific time based parameters.

9. (previously amended) The apparatus according to claim 1, wherein said encapsulation means receives TDM data on a plurality of constant synchronous serial bit streams.

10. (previously amended) The apparatus according to claim 1, wherein said encapsulation means encrypts said TDM data before packaging said TDM data into Ethernet frames.

11. (previously amended) The apparatus according to claim 1, wherein said encapsulation means compresses said TDM data before packaging said TDM data into Ethernet frames.

12. (previously amended) The apparatus according to claim 1, wherein said encapsulation means calculates a Cyclic Redundancy Check (CRC) code for use in packaging said TDM data into Ethernet frames.

13. (previously amended) The apparatus according to claim 1, wherein said encapsulation means comprises:

means for packaging TDM stream data into Real Time Protocol (RTP) packets, then into User Datagram Protocol (UDP) packets, then into Internet Protocol (IP) packets and finally into Ethernet frames; and

means for generating appropriate header information for said RTP packets, UDP packets, IP packets and Ethernet frames or a subset thereof.

14. (previously amended) The apparatus according to claim 1, wherein said encapsulation means forwards Ethernet frames toward an Ethernet Media Access Control (MAC) device.

15. (previously amended) The apparatus according to claim 1, wherein said segmentation means comprises:

means for extracting TDM stream data from the contents of a Real Time Protocol (RTP) packet, User Datagram Protocol (UDP) packet and Internet Protocol (IP) packet extracted from a received Ethernet frame; and

means for storing said TDM data in said egress buffer in accordance with the contents of RTP header information.

16. (previously amended) The apparatus according to claim 1, wherein said processor for performing rate adaptation between a plurality of TDM ports and an egress buffer interface.

17. (previously amended) The apparatus according to claim 1, wherein said processor for forwarding TDM frames to appropriate TDM ports as a constant synchronous serial or parallel bit stream.

18. (currently amended) An apparatus for transporting TDM streams over an Ethernet network, comprising:

a plurality of TDM port interfaces coupled to a plurality of TDM ports, each TDM port for receiving a constant synchronous serial or parallel TDM stream;

at least one Ethernet interface coupled to said Ethernet network;

encapsulation means for retrieving TDM data from an ingress buffer, assembling Ethernet frames therefrom, inserting therein a first timestamp related to said TDM data and forwarding said assembled Ethernet frames to said Ethernet interface;

segmentation means for receiving Ethernet frames from said Ethernet interface, extracting TDM data and a second timestamp therefrom and storing said TDM data in an egress buffer; and

a processor comprising means for:

receiving TDM data from a plurality of TDM ports;

storing ~~said~~ received TDM data in a queue within said ingress buffer ~~in accordance with output Ethernet frames~~ wherein all TDM data to be assembled within a single Ethernet frame is stored together; and

retrieving TDM data from said egress buffer and generating a plurality of TDM data streams therefrom.

19. (original) The apparatus according to claim 18, wherein said Ethernet interface comprises a 10Base-T Ethernet interface.

20. (original) The apparatus according to claim 18, wherein said Ethernet interface comprises a 100Base-T Fast Ethernet interface.

21. (original) The apparatus according to claim 18, wherein said Ethernet interface comprises a 1000Base-T Gigabit Ethernet interface.

22. (original) The apparatus according to claim 18, wherein said Ethernet interface comprises a 10 Gigabit Ethernet interface.

23. (previously amended) The apparatus according to claim 18, wherein said plurality of TDM port interfaces comprises at least one port interface selected from a group comprising E1, T1, E3, T3, OC-3, STM-1, OC-12 and STM-4 port interfaces.

24. (currently amended) The apparatus according to claim 18, wherein said encapsulation means encapsulates data from [[a]] said plurality of TDM ports into a single Ethernet frame.

25. (previously amended) The apparatus according to claim 18, wherein said encapsulation means encapsulates data from a plurality of TDM frames corresponding to a single TDM port into a single Ethernet frame.

26. (previously amended) The apparatus according to claim 18, wherein said segmentation means segments an Ethernet frame into a plurality of TDM streams, each TDM stream corresponding to a different TDM port.

27. (previously amended) The apparatus according to claim 18, wherein said segmentation means segments an Ethernet frame into a plurality of TDM frames corresponding to a single TDM port.

28. (previously amended) The apparatus according to claim 18, wherein said processor for storing TDM data received from a plurality of TDM ports in accordance with specific port based parameters.

29. (previously amended) The apparatus according to claim 18, wherein said processor for storing TDM data received from a plurality of TDM ports in accordance with specific time based parameters.

30. (previously amended) The apparatus according to claim 18, wherein said encapsulation means comprises:

means for packaging TDM stream data into Real Time Protocol (RTP) packets, then into User Datagram Protocol (UDP) packets, then into Internet Protocol (IP) packets and finally into Ethernet frames; and

means for generating appropriate header information for said RTP packets, UDP packets, IP packets and Ethernet frames or any subset thereof.

31. (previously amended) The apparatus according to claim 18, wherein said segmentation means comprises:

means for extracting TDM stream data from the contents of a Real Time Protocol (RTP) packet, User Datagram Protocol (UDP) packet and Internet Protocol (IP) packet extracted from a received Ethernet frame; and

means for storing said TDM data in said egress buffer in accordance with the contents of RTP header information or any subset thereof.

32. (currently amended) A method of transporting a plurality of Time Division Multiplexing (TDM) streams over an Ethernet network, said method comprising the steps of:

receiving TDM stream data from a plurality of TDM ports;

storing received TDM stream data in a queue within an ingress buffer wherein all TDM data to be assembled into a single Ethernet frame is stored together;

assembling Ethernet frames retrieved from said queue ~~received TDM stream data~~ and inserting therein a first timestamp related to said TDM stream data;

forwarding said assembled Ethernet frames to said Ethernet network via an Ethernet interface connected thereto;

receiving Ethernet frames from said Ethernet network;

extracting TDM data and a second timestamp from said received Ethernet frames and generating TDM streams therefrom; and

forwarding said generated TDM streams to an appropriate TDM port in a synchronous manner.

33. (original) The method according to claim 32, wherein said step of receiving TDM stream data comprises the step of storing said TDM data in an ingress buffer in accordance with an output Ethernet frame to be generated.

34. (original) The method according to claim 32, wherein said step of extracting comprises the step of storing segmented TDM data in an egress buffer.

35. (original) The method according to claim 32, wherein said Ethernet interface comprises a 10Base-T Ethernet interface.

36. (original) The method according to claim 32, wherein said Ethernet interface comprises a 100Base-T Fast Ethernet interface.

37. (original) The method according to claim 32, wherein said Ethernet interface comprises a 1000Base-T Gigabit Ethernet interface.

38. (original) The method according to claim 32, wherein said Ethernet interface comprises a 10 Gigabit Ethernet interface.

39. (previously amended) The method according to claim 32, wherein said plurality of TDM port interfaces comprises at least one port interface selected from a group comprising E1, T1, E3, T3, OC-3, STM-1, OC-12 and STM-4 port interfaces.

40. (currently amended) The method according to claim 32, wherein said step of assembling comprises the step of encapsulating data from [[a]] said plurality of TDM ports into a single Ethernet frame.

41. (original) The method according to claim 32, wherein said step of assembling comprises the step of encapsulating data from a plurality of TDM frames corresponding to a single TDM port into a single Ethernet frame.

42. (original) The method according to claim 32, wherein said step of extracting comprises the step of segmenting an Ethernet frame into a plurality of TDM streams, each TDM stream corresponding to a different TDM port.

43. (original) The method according to claim 32, wherein said step of extracting comprises the step of segmenting an Ethernet frame into a plurality of TDM frames corresponding to a single TDM port.

44. (original) The method according to claim 32, further comprising the step of storing TDM data received from a plurality of TDM ports in accordance with specific port based parameters.

45. (original) The method according to claim 32, further comprising the step of storing TDM data received from a plurality of TDM ports in accordance with specific time based parameters.

46. (previously amended) The method according to claim 32, wherein said step of assembling comprises the steps of:

packaging TDM stream data into Real Time Protocol (RTP) packets, then into User Datagram Protocol (UDP) packets, then into Internet Protocol (IP) packets and finally into Ethernet frames; and

generating appropriate header information for said RTP packets, UDP packets, IP packets and Ethernet frames or a subset thereof.

47. (previously amended) The method according to claim 32, wherein said step of extracting comprises the steps of:

extracting TDM stream data from the contents of a Real Time Protocol (RTP) packet, User Datagram Protocol (UDP) packet and Internet Protocol (IP) packet extracted from a received Ethernet frame; and

storing said TDM data in said egress buffer in accordance with the contents of RTP header information.